

Zodiac Moth
(Alcides metaurus)
on *Omphalea papuana*



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PLANNING AND ORGANIZATION MEETINGS

A quarterly meeting is scheduled in order to plan club activities and the magazine.
See BOIC Programme.

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Membership fees are \$25 for individuals, schools and organizations.

AIMS OF ORGANIZATION

- To establish a network of people growing butterfly host plants;
- To hold information meetings about invertebrates;
- To organize excursions around the theme of invertebrates e.g. butterflies, native bees, ants, dragonflies, beetles, freshwater habitats, and others;
- To promote the conservation of the invertebrate habitat;
- To promote the keeping of invertebrates as alternative pets;
- To promote research into invertebrates;
- To encourage the construction of invertebrate friendly habitats in urban areas.

MAGAZINE DEADLINES

If you want to submit an item for publication the following deadlines apply:

March issue – February 14 th	June issue – May 14 th
September issue – August 14 th	December issue – November 14 th

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COVER

Zodiac Moth (*Alcides metaurus*) on *Omphalea papuana* - Painting by Lois Hughes.
Prints of this painting may be available from the artist. Ph. 07 3206 6229



FROM THE PRESIDENT

As the publication date of our magazine approaches and I learn of the various articles that have been assembled, I am always impressed by the dedicated “work” that has been done by our contributors. Often this work have been carried out over many years, such is the dedication of the authors. In this edition, we welcome and thank three new contributors: Maya Harrison, in her cover story on the Zodiac Moth, shares her colourful journey of discovery with us; Todd Burrows writes of the Silky Jewel; Linda Rogan of the Imperial Hairstreak.

Kelvyn Dunn’s article reminds us again to expect the unexpected if we employ keen observation at any time of the year.

Just when I thought I had gained a victory over the slugs and snails that proliferated and feasted on so many of my seedlings in our wonderfully wet summer and autumn, Densey Clyne writes of how beautiful slugs can be. I fear I will now have to go out at night with a strong torch to determine friend or foe before waging war on these slippery creatures!

Limited space permits me only to say, “Thank you” to all of our other writers and photographers. Your articles will be read with pleasure and interest.

Unfortunately, the position of Club Secretary remains vacant. Do we have a volunteer?

Best wishes **Ross**

IN THIS ISSUE

Creature Feature - The Zodiac Moth	4
Hostplants of the Zodiac Moth in Australia	7
President's Report for AGM 2010	9
Anyone for Slugs?	10
Imperial Hairstreak butterfly (<i>Jalmenus evagoras</i>)	13
Life history notes on the Wide-brand Grass-dart (<i>Suniana sunias reactivitta</i>)	15
Life history notes on the Silky Jewel (<i>Hypochrysops digglesii</i>)	18
Winter butterfly observations near the Melbourne CBD	19
Some FAQs About Stingless Bees	26
Excursion Report - Ray and Delphine Archer's property - 6 th and 7 th February 2010	29
At the Light Trap - A night at Ray's	30
DVD Review - The Imperial Blue Butterfly	33
You Asked - What butterfly is this?	33
New host plant for the Scarlet or Northern Jezebel (<i>Delias argenthona</i>)	35
Letters	35
Butterfly larvae images	38
BOIC Programme	39



The Zodiac Moth... A discovery and study - Maya Harrison, Visitors Services Officer at the Mackay Regional Botanic Gardens



Alcides metaurus

Whilst resting on a log at the Mackay Regional Botanic Gardens and gazing upward towards the leafy canopy in the Shade Garden, I noticed a large 'butterfly' resting on a leaf with its head down. "Wow what are you?" I asked myself, noticing its bright arc of iridescent colours? Not having seen such a large creature like this before, I looked in our

Australian butterflies book to see if I could identify it. No luck, so by chance I thought to look in an Australian moth book and there it was...in the *Uraniidae* family... *Alcides metaurus* (formerly *A. zodiaca*)...commonly known as the North Queensland Day Moth or Zodiac Moth.

According to the literature, *Alcides metaurus* is a very large and conspicuous day-flying moth, most readily seen in the early morning when it visits flowers to feed. It is found in rainforests from Cape York south to Mackay in Queensland. The larvae feed on *Omphalea queenslandiae* and two species of *Endospermum* (the former vines and the latter trees in the family Euphorbiaceae).

The moth species pictured above, was photographed during December 2008 at the Mackay Regional Botanic Gardens in the Shade Garden and adjoining Palm Walk. In the Palm Walk Gardens are a number of Tree *Omphalea*... *Omphalea celata*, the only tree species in the *Omphalea* (mostly vine) genus in Australia. These moths can be seen fluttering at all times of the day and are especially active in the late afternoon.

A caterpillar was located on the Tree *Omphalea* growing in the Regional Forest Garden... the tree had been decimated... but with leaves from other trees the rescued larva was fed until pupal stage in March 2009.

Having found many caterpillars in the Tree *Omphaleas* in Palm Walk, differences were noted in the colourings of the caterpillars. Some had deep red and black markings, some were green with lighter stripes and others were a plain green... why the differences?

It could be that the different stages of the caterpillars' development coincides with



their changes in colour? The young caterpillar is dark with red patches and some white spots and stripey black bands. The caterpillar seemed to become greener the larger it became...or was this just what appeared to be from the specimens available? There still seemed to be differences between caterpillars just before they pupated... some were green but with visible stripes whereas others seemed to be a plainer green. The black band at the head end was evident in both types of the fully grown caterpillars. Could it be that the differences were due to being either male or female?



Examples of some colour variation

Lots of questions to be answered!

The caterpillars appear to have a defense mechanism of dropping on a strong and sticky silken thread when they detect danger. After hanging for a period of time, they then twist their bodies and climb back up the thread to resume their position on the leaves or twig. I took a small video to document this action. The caterpillar also passed excrement.

Before pupation the caterpillars create a silken pouch... joining several leaves together around them with a strong thread. It is like a totally enclosed vertical lacy hammock! Here the caterpillar changes into a pupa and the developing moth can be seen inside. I have not observed any caterpillar lowering to the ground to pupate in leaf litter or in crevices as written in articles found on the web... “The larvae of this moth feed mainly on the vine *Omphalea queenslandiae* and pupate in transparent cocoons between dead leaves on the ground or in crevices.”
(rainforest-australia.com/**zodiac**.htm)



Larva beginning to create a cocoon



Pupa within its cocoon



In fact, I have observed that when all leaves of the Tree Omphalea are eaten and none remain, the caterpillar will create this lacy cocoon enclosure in adjoining trees and plants in natural conditions. I have not observed any caterpillars pupating elsewhere but in between joined leaves. However in my observation containers, the caterpillars would make their transparent cocoons either between leaves or against the edges of the container either at the base in corners, on the sides or even on the underside of the lid.



Pupa

Parts of the developing moth can be seen through the pupal wall just before the moth emerges. The wings and eyes are clearly visible in the developing pupae. After about 2 weeks the moth emerges then expands and hardens its very velvety looking wings.



Expanding its wings

The upper and under sides of both wings are very different; the underside having strong jade green/light blue and black colourings while the upperside has a semi-circle of iridescent rainbow coloured scales. When taking a photo with a camera flash the reflective scales are accentuated.



Adult upperside

and



underside



More differences in colours! “I wonder what is the purpose of these colour differences”

I was still wondering about the different colour variations I had previously observed in the caterpillars. At least 13 different versions were noted, including yellow /orange, a tartan brown, red and black combinations, sometimes the caterpillar being nearly all black with some red and vice versa, a yellow green, a plain lighter green with faint yellow stripes, a dark plain green (these green ones always being much plumper than the other coloured caterpillars). Could one clutch of eggs produce one colour variation or could one clutch produce a range of colour variations? On the 6th April 2009, I was fortunate to see a moth laying eggs and collected the leaf with these fresh eggs. The Zodiac Files had begun! (To be continued in a future issue of Metamorphosis Australia.)



Egg laying

Photos Maya Harrison

PLANT PROFILE

Hostplants of the Zodiac Moth in Australia - John T. Moss

The large and magnificent day-flying Zodiac Moth (*Alcides metaurus*, formerly *A. zodiaca*) fam. Uraniidae, has been a source of wonder and mystery in Papua New Guinea and northern Australia for nearly two centuries. Often mistaken for a swallowtail butterfly, its Australian larval food plants were unknown until the early eighties when Coleman and Monteith (1981) reported that larvae fed on the leaves of the large, canopy scrambling, rainforest vine *Omphalea queenslandiae* (fam. Euphorbiaceae).

O. queenslandiae has a large North Queensland coastal distribution, in tropical rainforest and also, according to Alan King (pers. comm.), occurs in swampy forests around Innisfail. Cooper and Cooper (1994) give the distribution as “foothills to upland rainforest of northeastern Queensland”. In their classic work they illustrate beautifully over two facing pages, not only the fruit and foliage, but also a specimen of the moth resting, typically, with wings outspread, on a leaf of the vine.

Alan King (unpub.) reports the moth utilising the related vine *O. papuana* in one of Townsville’s botanic gardens. This rare vine’s natural occurrence is much further north in the Iron Range/Claudie River region of eastern Cape York, as well as in



Papua New Guinea. Undoubtedly it is the moth's natural hostplant at the former locality, and probably in PNG as well.



Omphalea papuana – juvenile left – adult right
Photos Russel Denton

O. papuana differs from *O. queenslandiae* in having juvenile foliage with deeply divided (3 to 5 lobed) simple leaves. The adult foliage of both is similar, although the latter has relatively smaller leaves (A.King pers.comm.). Lois Hughes has superbly illustrated both moth and these juvenile leaves on the cover of this issue.

Monteith and Wood (1987) determined that in Australia there were two species of *Endospermum* (also Euphorbiaceae) – *E. myrmecophilum* from the Bamaga-Lockerbie rainforests at the tip of Cape York Peninsula and *E. medullosum* which occurs from Iron Range to Tully and in the Northern Territory. Both these medium to large trees have large hairy leaves, either peltate or subcordate in form. Additionally, the former tree, as its botanical name suggests, exhibits hollowed out branchlets, many of which contain ant colonies.

In their paper, Monteith and Wood reported on the observations of Denis Kitchen and Harry Fay, namely on the former's rearing of Zodiac Moths from *E. myrmecophilum* at Bamaga in 1985 and the latter's rearing of the moth from *E. medullosum* at Mission Beach in April 1987, thus confirming a second euphorbiaceous hostplant genus for this moth and also a few related nocturnal uraniids.

However, for many years, the Zodiac Moth has been reported well south of the distribution of these four hostplants, in particular around Bowen and in the Mackay hinterland. I was unwittingly involved in the discovery of its fifth recorded hostplant in the Eungella area west of Mackay, by ranger Steve Pearson of the Queensland Parks and Wildlife Service.

Sometime in 1986/87 Steve rang me about "a large swallowtail butterfly" that he couldn't identify and which was flying "in large numbers" around an unknown tree within the national park. I realised that it had to be the Zodiac Moth, but was curious about the tree which was said to resemble a Candlenut Tree (*Aleurites* species). In fact, following deposit of a specimen in the Queensland Herbarium, it was given the



presumptive identity of *Aleurites* sp. “Hazelwood Gorge” (from its first discovery site). Later, further study by botanist Paul Forster led to its revision and placement within *Omphalea* as *O. celata*, becoming the only tree within this genus of lianes.

There are photos in Pearson (1992) showing both fruit and foliage, the former closely resembling that of the Candlenut and the latter having softly textured leaves with undulating margins and clustered on terminal branches, neither resembling typical *Aleurites* nor *Omphalea*! The image of foliage of a seedling tree accompanying this article should help to illustrate this point.



Omphalea celata seedling – Photo J. T. Moss

An interesting illustrated A4 size flyer from the Mackay Regional Botanic

Gardens showing the moth and both foliage and fruit of *O. celata* states that the tree “is only known from three small isolated populations in Central Queensland”. It further states that the tree germinates readily from marble-sized seeds and grows easily in sandy, rocky and shallow soils. “It is a water-wise plant that stores water in its fat, fleshy, carrot-shaped roots.”

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- Pearson, S. and Pearson, A. 1992. *Rainforest Plants of Eastern Australia*. 224p. Kangaroo Press.

PRESIDENT’S REPORT FOR AGM – 17TH APRIL 2010

Another year has hurried by and I thank committee members for their contributions during the past year.

Peter Hendry will be unable to take on the role of Club secretary this year but will continue to be actively involved writing articles and applying technical expertise to images for the magazine. He has taken the microscope assembly “under his wing” and, combined with the recently acquired Helicon Focus software, this will result in



some very interesting images. I encourage members with an interest in using the microscope to contact Peter.

Daphne Bowden has been the steady rock around which numerous articles for the magazine have swirled, been plucked from the stream, referred to numerous specialists and proofreaders, blended into an excellent format, then printed and dispatched to our readers. She continues to field numerous enquiries from a wide geographical range and is a wonderful ambassador for the Club. Together with our efficient treasurer, Rob, Daphne unravels the complex membership status of “paid up”, “pending” and “overdue/lapsed” members. Lois continues to paint beautiful covers for the magazine, field phone enquires and pursue her love of stick insects. John has worked as our scientific ambassador over the year conducting talks and tours, reviewing as well as writing articles for the magazine. Alisha’s expeditions have been most enjoyable and informative.

Thank you to the many members who have contributed to “Metamorphosis Australia” in the last year. These contributions ensure that the magazine, which is our main contact with our far-flung membership, caters for a range of interests in invertebrates.

We have again benefitted from grants by the Brisbane City Council. \$1000 was received to help with printing costs of our magazine and \$350 purchased the 3D software Helicon Focus. Membership fees and sales of books etc now cover the cost of printing and postage.

Throughout the year we have enjoyed a good working relationship in a number of activities with the Entomological Society of Queensland, the Queensland Museum, Brisbane City Council, Redlands City Council, Moreton Bay Regional Council and the Society for Growing Australian Plants.

In the coming year, I would like to see the BOIC website come to realise its potential. We really need a member with computer expertise and enthusiasm to take on this task.

ITEMS OF INTEREST

Anyone for Slugs? - Densey Clyne

No, thank you very much, you will be thinking. Slimy pests with no redeeming features at all - away with them! Well yes, some of them, but others deserve a closer look. If I had not become so thoroughly captivated by six-legged and eight-legged arthropods so early in my life I believe it would have been the slugs and snails that took my fancy. There is something so elegant about a snail gliding along, rather like a ship on a calm sea, and the courtship and mating habits of slugs can be spectacular. But one particular kind of slug has always intrigued me.



Over the summer months one of the smooth-barked gumtrees in my Wauchope garden acquires an artistic pattern of meandering squiggles. One rainy night I went out after dark and there was the artist, moving very slowly high up on a branch - my old friend first met in Sydney, the Red Triangle slug, *Triboniophorus graeffei*. It was my first sighting of the slug in my new garden though I had recognised its squiggles on the gumtree. This year I've been excited to find them for the first time on my crepe myrtle trees, planted 5 years ago.



Triboniophorus graeffei on gumtree

I first got to know these slugs years ago in an overgrown Sydney suburban garden where giant bluegums grew on rich soil and it rained a lot. The slugs had taken a liking to a mature crepe myrtle tree, adding an extra touch to its beautifully patterned trunk. As well as being much bigger - up to 140mm - these slugs were different from any other slugs I knew. On a smooth, cream-coloured body a red line formed a distinctive triangle around the breathing hole and also outlined the edge of the 'foot', the body part a slug glides on.



T. graeffei on Crepe Myrtle



Close-up of feeding tracks on Crepe Myrtle

Later in another Sydney suburb I came across a slightly different Red Triangle slug. Glancing casually at fallen leaves on a flat sandstone rock I did a double take - one of the



T. graeffei on fallen gum leaves on sandstone rock



leaves was moving! This slug was greyish in colour with a bubbly textured skin and leaf-like 'veins' on its back - and the markings that clearly identified it were orange rather than red. Subsequently I always found this variety of *Triboniophorous* feeding on leaf litter or rock surfaces and never on tree-trunks.

Red Triangle slugs are quite common in east coast gardens from Queensland to southern NSW, but though large they're mainly nocturnal and moisture-dependent so we don't often come across them. The slugs feed on micro flora, the fungal growths that form a thin skin on the smooth bark of some trees. We're only aware of these minute fungi when they're partially removed. It is this 'paper trail' on a tree trunk that tells us the big slugs are around.

A close look at the neat rows of squiggles shows they're semicircular or horse-shoe shaped. These are the feeding tracks made by the slug's *radula*, a straplike 'tongue' covered with rows of teeth. As the slug feeds the radula moves forward like a conveyor belt, discarding worn teeth at the front and replacing them from behind with new ones. Carnivorous snails have big sharp teeth; garden pests have teeth suitable for chomping holes in leaves. Red Triangles have tiny rasp-like teeth for scraping off their food.

Although it is common to all slugs and snails, this amazing piece of apparatus is otherwise unique in the animal kingdom - for which we should give our little 'enemies' due acclaim. But the Red Triangles themselves, which are found only in Australia and New Zealand, have further claims to distinction. They have only one pair of tentacles or eye-stalks where other gastropods have two pairs - a quick aid to their identification. Although they have lungs like other molluscs these breathe through a system of tubes more like the tracheae of insects.

None of our terrestrial slugs can compare with their gloriously coloured marine relatives the sea slugs but some forms of *Triboniophorus graeffei* have a good try.

On location in northeastern NSW many years ago, cinematographer Jim Frazier and I came across what must be the most spectacular slug on dry land. It was in wet forest on the slope of Mt. Kaputar and it was blood red from head to tail! On another location, among the antarctic beeches of New England National Park, I photographed the beautiful yellow variety with its scarlet markings. I believe there is a pink one somewhere in North Queensland!



T. graeffei – red form



Back to my Wauchope garden. On a wet morning recently I noticed a small, slender slug gliding on a leaf. Grey with longitudinal stripes it looked at first glance like one of the pest kinds and my instinct was to reach for the snail bait. But a close look with a magnifying glass showed me a red triangle and only two eyestalks – instant reprieve! However the stripes bothered me so I made a phone call to an expert. . . and yes, stripes are a normal pattern for juvenile Red Triangles.



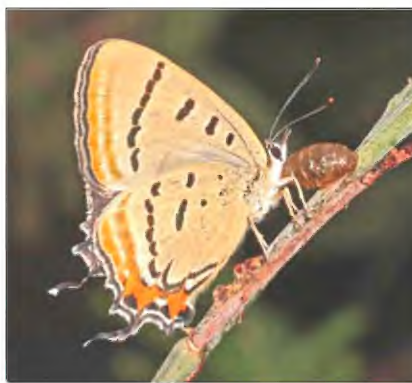
T. graeffei - juvenile

So I put little slug back on its leaf and wished it well as a future artist of my garden tree-trunks.

Photos Densey Clyne

Imperial Hairstreak butterfly (*Jalmenus evagoras*) (also known as Common Imperial Blue Butterfly) - Linda Rogan

In recent years, I have been captivated by butterflies in the Melbourne area. I have been photographing any that will stay still long enough, from the large (for southern butterflies) and showy Dainty (or Dingy) Swallowtail to the tiny Two-spotted Line-blue butterfly. One in particular has been accommodating enough to allow me to observe and even photograph all stages of its life cycle. That butterfly, with a 32-37mm wingspan, is the Imperial Hairstreak (*Jalmenus evagoras*). I first had a good look at this jaunty butterfly in 2008 and I couldn't believe that I had been walking



Imperial Hairstreak butterfly (*Jalmenus evagoras*) - male



past it each summer for the past 25 years without taking any notice. The orange spots and dainty tails are quite dramatic, but its life cycle is even more remarkable.



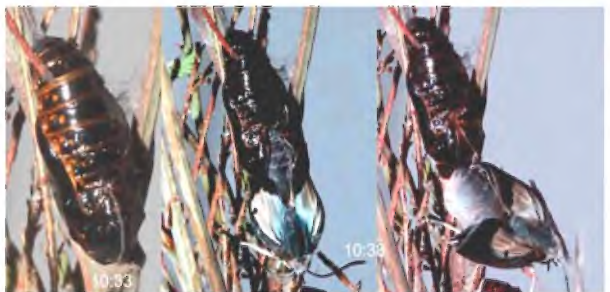
Most of the butterflies in this cluster have already eclosed, ants attend those yet to come.

noticeably smaller than the Cabbage White that we southerners all know so well, but clearly larger than the Eltham Copper Butterfly. If it alights and opens its wings to warm in the sun, the pale to bright blue upper wings shine out. When the bush where it alights is one of the above mentioned wattles, it is very likely that pupae, caterpillars and attendant ants will also be found there.

The caterpillars tend to aggregate together, especially in the evening when they cluster together near the ends of branches for the night. They often pupate in large groups as well. I have counted more than 50 but not all eclosed at the same time.

The attendant ants are a species of *Iridomyrmex* ant that help to protect the eggs, caterpillars and pupae from other aggressive ants, wasps and other predators. In return the ants receive rewards of sugars and amino acids secreted from special glands on the caterpillars' back. Even the pupae have glands that secrete rewards for the ants (p.285 Pierce and Nash). Although I am unable to hear it, both the caterpillars (p.284 Pierce and Nash) and the pupae also stridulate (some say sing) in a way that attracts these ants.

Despite the guarding by the ants, some predators are successful but when ants are present survival of the caterpillars increases many fold and in fact the ants "are essential to the butterflies" (p. 294 Pierce and Nash).



From the first split of the pupal case to eclosed took 5 minutes





This newly eclosed female is being mated before her wings are fully spread.

However, there is one wasp, the *Apanteles* wasp, which uses the presence of ants to help it locate these caterpillars. This wasp lays its eggs into the living caterpillar where they hatch and feed on the non-essential organs of the caterpillar, emerging to pupate under the carcass of the caterpillar at the fourth instar stage. Normally the caterpillar passes through five instar stages, before it pupates.

Recently I've had the exciting experience of watching an adult butterfly emerge from its pupal case (this took five minutes), and climb up a twig to inflate its wings (this took over an hour).

The hardest stages to observe, unless you have very sharp eyes, are the eggs and the newly hatched

caterpillar. When viewed up close, these eggs are exquisitely formed but only about 0.6mm in diameter. This butterfly overwinters in the egg stage to hatch out as first instar caterpillars next spring.

I have included this information and more in the audiovisual DVD *The Imperial Blue Butterfly*.



Eggs are .6 mm in diameter

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Photos Linda Rogan

Life history notes on the Wide-brand Grass-dart, *Suniana sunias rectivitta* (C.Felder,1860) Lepidoptera: Hesperiiidae -Wesley Jenkinson

This small butterfly previously known as the Orange Dart occurs along much of the wetter coastal regions of Queensland into New South Wales. I have found the adults



can be very numerous during the late wet season along grassy rainforest margins in North Queensland. The adults occasionally visit my garden in Beaudesert in Southeast Queensland after substantial rain during the summer and autumn months.

I think of the adults as being a ‘cheerful’ species, with the orange upperside markings being brighter in comparison with other species of grass-darts in the two genera *Taractrocera* and *Ocybadistes*. The orange upperside markings are much more extensive than the related Dark Grass-dart (*Suniana lascivia lascivia*) and it is marginally larger than the Greenish Grass-dart (*Ocybadistes walkeri*), the male of which also has a ‘wide’ sex brand. Within Queensland, individual specimens vary minimally in the extent and intensity of the orange markings.

Wingspans for the pictured adult specimens are males 19mm and females 21mm.



Suniana sunias rectivitta (Wide-brand Grass-dart)

Images right to left: male, female, male underside, female underside

Adults have the typical erratic rapid ‘skipper’ flight and frequently settle on grass or low-lying vegetation to bask in sunshine. The males are very territorial and are often observed in pairs flying approximately 100-150mm apart engaged in swift chases, often returning to settle on the same perches. (Similarly observed by P.Valentine 1988; M.Parsons 1991).

The adults of both sexes are readily attracted to a wide range of small flowers.

I observed a female fluttering slowly amongst a known host grass Green Panic (*Megathyrus maximus*) in my backyard. She then settled on the upperside of a leaf and curled the abdomen onto the underside of the leaf and laid a single egg. After flying short distances, the process was repeated again on other leaves. The wings remain closed while ovipositing. Several eggs were collected and raised to adults.



Freshly laid egg (left) and a 4 day old egg (right)

The eggs are dome shaped, approximately 0.6 mm wide x 0.8mm high, smooth and cream when laid. After two days they developed a pinkish-red lateral band and apical spot similar to *O. walkeri*.

In captivity during January, the larvae hatched between 6.00 am and 7.00 am and consumed the eggshells shortly afterwards. A first instar larva



created a shelter about 20mm long towards the apex of the host leaf. A small cut was made approximately one quarter of the way across the leaf. The section towards the leaf apex was then curled over and stitched with silk to create the shelter. The shelter was later lined with silk. The larvae fed at dusk and chewed from the outer edge of the leaf stopping at the midrib, allowing the shelter to hang. (Feeding habit similarly described by M. Braby 2000.) The larger instar larvae stitched two adjacent leaves together to create their shelter. Several shelters were created throughout the larval duration.

All of the larvae completed five instars and attained an approximate length of 26mm.



1st instar larva



5th instar larva - NB The fifth instar larva pictured has two (only one visible in image) creamish yellow oval shaped gonads on the dorsal side indicating it is a male.



Pupal shelter

The final shelters were stitched closed with a small opening remaining at the anterior end (the adult emergence hole).



Pupa lateral view with discarded head capsule



Pupa ventral view also showing head capsule

The pupae measuring 16mm in length, were located in the final shelter and were covered in a white waxy powder. (Similarly described by M. Braby 2000.)

Eggs laid on 2nd January 2009 hatched in 6 days, the larval duration 32 days and pupal duration 10 days, with adults emerging in February, 48 days since oviposition.

Within the new boundary of the Scenic Rim Regional Shire south of Brisbane, I have records of the adults from December to April, however they are possibly present during spring in the wetter locations of this region.

So next time you are in the garden, spend some time looking for this fine species as it may be present!



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- Photos Wesley Jenkinson

Life history notes on the Silky Jewel *Hypochrysops digglesii* (Hewitson, 1874) Lepidoptera: Lycaenidae – Todd Burrows

On the afternoon of the 26th of March 2010 I discovered larvae of the Silky Jewel (*Hypochrysops digglesii*) feeding on the mature leaves of Apostle Mistletoe (*Dendrophthoe vitellina*) along the western shoreline of South Stradbroke Island QLD. The mistletoe was growing on a Pink Bloodwood tree (*Corymbia intermedia*) and was literally overhanging the water at high tide. The Apostle mistletoe was itself being parasitised by Golden Mistletoe (*Notothixos subaureus*).

The first larva observed was close to maturity and was being attended by a number of small black ants. As soon as I disturbed the larva it retreated to a curled leaf shelter. The majority of the leaf was curled and dead however the top third attached to the stem was living. I opened the shelter to photograph the larva and within a short period the number of attendant ants increased dramatically, seemingly in defence of the larva. A further inspection of the plant revealed a number of the leaf shelters, most of which had a single larva of varying size inside. I also located a larva of Margarita's Blue (*Candalides margarita*) feeding on the new growth of the plant; it was basically ignored by the ants, except for a short inspection on their way past.

A late and early instar larva of *H. digglesii* were collected to be raised. The larger of the larvae pupated four days after collection (on 30/3/10) attached to the surface of one of the



Late instar larva with attendant ant



Early instar larva



mistletoe leaves. A male emerged thirteen days later (on 12/4/10) and was photographed indoors. Upon release the specimen sat on a fern in the sunlight and posed with wings open before taking to the air in a rapid flight.



Hypochrysops digglesii male



Hypochrysops digglesii male

Adults are very inconspicuous and rarely seen. Males have a wingspan of approximately 29mm with females slightly larger at 31mm. Larvae feed on a variety of mistletoe species and of these Bloodwood Mistletoe (*Amyema bifurcata*), Bronze Mistletoe (*Amyema miquelii*), Apostle Mistletoe (*Dendrophthoe vitellina*) and Banksia Mistletoe (*Muellerina celastroides*) have been recorded on South Stradbroke Island. Larval attendant ants are from the *Crematogaster* genus commonly referred to as Acrobat Ants. The Silky Jewel occurs in coastal and sub-coastal areas of Australia from northeastern NSW to the northern tip of Queensland. (Braby, 2005)

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Photos Todd Burrows

Winter butterfly observations near the Melbourne CBD – Kelvyn L Dunn

Summary

This paper explores a puzzling occurrence of flight activity in the Saltbush Blue Butterfly, *Theclinesithes serpentata* (Herrich-Schäffer), at Footscray during the winter of 2009. Astonishingly, there appear to be no previous records of this butterfly flying in winter (June, July or August) in metropolitan Melbourne. Indeed, for southern Victoria, the literature provides just one winter record for the whole of the 20th



century! A number of explanations are examined, including a link to global warming or climate change as one possibility.

Introduction

The Victorian butterflies are well documented for the inner Melbourne area, so one might question if there could be anything new (of importance) to report. This paper does not document records of various resident species to add to Braby (1987). Instead, it deals with one species only, namely the Saltbush Blue, *Theclinesstes serpentata* (Herrich-Schäffer) – a locally common lycaenid linked to saltbush habitat in shore scrubs and estuaries. (Vouchers for this study are now in the Museum of Victoria, Melbourne (MV) and the ANIC, Canberra).

For the region of Howe in southern Victoria, Dunn and Dunn (1991) charted the flight period of this butterfly as from September to April, with a singleton for July (p.154). The Otway region was charted similarly from October to April, but with singletons for each of the months of May, August and September (p.151) suggestive of irregularity at such times. Braby (2000) later generalised the flight season for all of Victoria as from August to May inclusive, based on these and other sources. However, his approach seriously marginalised the Riverina. In the northwest, the winter climate is warmer than southern Victoria and the seasonal appearance of the butterfly is variably more expansive. For example, near Mildura, it flies throughout winter based on regular observations over a 12-month period by Plant (1951). Elsewhere in northwestern Victoria, there is a sprinkling of August records too. These late winter records sweep southeasterly to Hepburn Springs, where I found adults flying commonly back in 1977 in the early days of my record keeping – but none near Melbourne in August. Seasonal regularity in this species is historically well known, and has long been part of the field experience of local butterfly observers who have resided in Victoria. It agrees with my own field experience here too, spanning many years. Indeed, over 250 Victorian records of this butterfly – extracted from many scattered sources and now centralised in the butterfly database (Dunn 2009a) – are supportive. Nonetheless, exceptions such as rare events can (and will) occur when records accumulate over decades or centuries.

In this new millennium and with popular media voicing concerns about projected global warming, it is important to look for change if (and when) evidence appears to show. As a number of species of butterfly appear in some years in early or midwinter in inner Melbourne (and further south), this adds a layer of complicity when seeking evidence of change. For some obvious examples, *Zizina labradus* is occasional (Braby 1987) and the odd solitary adult of *Vanessa itea*, which may over-winter locally as adults (semi-hibernate), will make appearance on sunny days. *Candalides acasta* and *Nacaduba biocellata* often join the winter fliers too – both have been reported historically and recently in the database. In addition, on two occasions (but not more), I have seen singletons of *Pieris rapae* flying in the southeastern suburbs in



July, and Braby (1987) reported a July encounter in a northern suburb. In midwinter, it is uncommon to see any adults of these species and when present they are normally solitary. *Delias harpalyce* is the exception; it can have the occasional winter emergence in southern Victoria and becomes locally conspicuous when this occurs, linked to synchronised brood emergence. In my experience near Melbourne, butterflies are virtually unseen after the second week of June or before the second week of August. From mid August a number of other species appear, especially by the end of the month as spring approaches.

Observations

An old report of a winter encounter with *T. serpentata* on Philip Island (Quick 1973), prompted me to investigate for adult activity in winter at a metropolitan site where I knew the species could be seen with regularity. Newells Paddock Wetlands Park is an area of habitat conservation within view of the Melbourne CBD. Here adults bask on herbs on a north-facing slope of the pedestrian bridge over the Maribyrnong River, near Ballarat Road in Footscray. The butterfly's presence in this habitat remnant is historic on supposition, and it is still prolific at times during the main flight season (spring to autumn). Remarkably, early workers appear to have overlooked its close presence to Melbourne, following its recognition as a new species in 1869. I know of no dated records between the 1870s and 1910s from what is now the inner city, save an early museum specimen labelled 'North Melbourne' and taken in 1907 (ANIC). Anderson and Spry (1894: 89) listed "Brighton", and described the species as "somewhat rare in Victoria" probably linked to their unfamiliarity with its specialised habitat requirements. Although sections of its formerly extensive coastal habitat has been fragmented or lost to housing over the many decades since, the butterfly still makes regular appearances in parks and gardens in the inner suburbs. I have chanced upon adults in December 2004 and March 2007 along the railway line at Flemington, for example, where they perched and patrolled near some food plants that then remained (but since removed). Nonetheless, adults are more often sporadic in



Roosting males of *T. serpentata* during overcast period at Newells Paddock Wetlands Park on 15 May 2010 1550-555h AEST. Photos Kelvyn Dunn



woodlands and suburban areas away from shore habitats where they breed, doubtless leading to such a view of scarcity in that early era of entomological exploration.

I twice visited the wetlands breeding site in Footscray just after the anticipated close of the species' flight period. A few adults were still active during sunny weather on 5 June (at c.1500h AEST) and again on 11 June 2009 (at c.1245h AEST). On both visits (of 15 minutes each), adult numbers were low as expected at the close of the flight season. I saw just three on the 5th (temp.: 16°C) and only two on the 11th (temp.: 11°C). All were in moderate condition, probably having been on the wing for a week or more at that time. I retained a male voucher (now in ANIC) for the seasonal record



T. serpentata male photographed at Boondall Wetlands, Brisbane. Photo Russel Denton

of the 11th; the species being historically unrecorded near Melbourne in June. At that time, I reasoned that adult presence in the second week of June would likely occur about two or so times a decade at most. I also presumed that other workers had overlooked such previous happenings when suitable late autumn conditions could promote brief extensions of flight activity into early winter.

I then revisited the site in mid winter curious to see whether I could find a late straggler flying.

Initially all was still on 17 July 2009. Then the sun came out from behind clouds. Amazingly, several were seen flying, others perching and basking near the saltbushes. A few males inspected other flying males, and at times up to five butterflies were visible on the wing in a single glance – far more than in early June! During brief sunny periods between 1300-1320h AEST, and with a temperature of about 12-13°C, a number of adults fed at the flowers of two herbs, probably introduced weeds, growing profusely along the riverside. Linked to the cool temperature, butterfly activity ceased immediately the sun overshadowed again. At this time two vouchers (a male and female; placed in MV) were hand-collected whilst they roosted; the remainder reluctant or unable to fly until warmth from sunshine permitted activity again. Although the wing condition of most ranged from moderately to very worn, a small number appeared to be freshly emerged! Apparently the population was no longer in seasonal decline but now presented as a small midwinter generation. I looked for Cabbage Butterflies (*P. rapae*) too, expecting these to be active companions in what might be an unusually warm winter. *P. rapae* had been present in low numbers on both visits in June, as occurs in some years near Melbourne, but typically the last late adults are gone by mid June. Absence of Cabbage Butterflies in



July, as per normal, did not suggest an unusual season that could explain this bizarre abundance of lycaenids (although see Explanation 5). Given a small emergence in early July, I would expect that flight activity continued thereafter through to August and into September, but no opportunities to visit later in July or periodically during August arose to confirm this.

Discussion: Possible explanations and related factors

This unusual midwinter record raises questions as to why. Each of the following six factors need thoughtful consideration to help answer this:

- 1. An extensive spatial and temporal baseline of evidence is available.** The Dunn & Dunn database has centralised 23,700 butterfly records from Victoria (Dunn 2009b). These have accumulated from collecting, literature sources and field observations by many experts over several generations (Dunn 2009a). This quantity can accurately predict the seasonal appearance of adults, and provides a snapshot of species' distribution (temporal and spatial) at the close of the 20th Century (Dunn 2010). Moreover, collectors' focus on areas close to their residencies (Dunn 2009b) has enhanced this (already solid) knowledge of butterfly temporality in the Melbourne region. Between 1870 and 2008 there have been no winter records of this butterfly from greater Melbourne – a period of nearly 140 years – enough time to suggest its absence. Hence, this recent discovery seems astonishing!
- 2. There has been a lack of interest in sampling in winter.** In cool temperate climates, butterfly collectors tend to survey in particular seasons – usually late spring to early autumn – to gain specimens suitably conditioned for the cabinet (Dunn 2009b). As Quick (1973: 4) once penned, “*A midwinter’s day in southern Victoria must rank as one of the most unlikely occasions for an outing.*” This collector-driven partiality has acted against random sampling of months (Dunn 2009b), and means that support for a winter absence remains circumstantial. Compensatory to an extent, I have purposely carried out off-season observations in parklands and in native habitat close to Melbourne over many years. This purpose-driven approach has clarified the limits of adult activity of many of the local species. In addition, Braby (1987) has shown interest in recording seasonal timeliness, and probably other workers from time to time have acted similarly to bridge this knowledge gap. This said, that apart from the event in 2009 in Footscray, I had not personally sighted any adults of *T. serpentata* after April in southern Victoria since my regional observations on this particular butterfly began in 1977. However, I suspect adults likely linger through to early May in most years, and a record for May, of a male in moderate condition, was confirmed in 2010 at the site (Figures 1-3).
- 3. Large populations may increase chances of winter broods.** Over the decades, anomalies such as midwinter adults of various species will accumulate as part of



genetic variation and chance happenings. A seasonal extension may result from natural selection to maximise use of available resources and to optimise populations to fit their local climate. A propensity towards faster larval and pupal development under cool conditions in autumn would underlie as mutations in some individuals. In order to record this species in winter then, as Quick (1973) inferred as a reasonable possibility, observations by determined searching in the breeding areas would be essential. The wetlands at Footscray support a sizeable population that would increase the probability of detection of any off-season adults. Away from strongholds, even if untimely adults were present, their numbers would likely remain too low to detect.

4. **Some regions may permit broader flight periods linked to unusual topographies or microclimates.** The database up to 2008 held but a single midwinter record of this species from southern Victoria (as charted in Dunn and Dunn (1991) for the region of Howe). On 15 July 1973, Tony Bishop captured one adult on Philip Island (Quick 1973), at '1km N of Swan Lake' as per the Quick database (in Dunn & Dunn database). Described as "a surprise", Quick reasoned that the species may have "sufficient tolerance to cold to be on the wing, if unobserved, throughout the year" (p. 5). However, this adult was flying at the winter breeding colony of *Danaus plexippus* (Quick 1973), situated on a northern dune between Swan Lake and the sea. Perhaps some unusual factors that permit a continuous adult presence of the Monarch butterfly at this southern latitude in Australia may act similarly on *T. serpentata*, expanding its flight period. As the facts stand, there was just the one adult that time (not a brood), and on the second excursion on 16 July 1978, which I attended, we did not see any adults of *T. serpentata* (Carwardine 1978). The limited evidence suggests a rare event on Philip Island – albeit that no further data on butterfly activity are available from this site since then, as the area may now be off-limits to visitors. The Footscray site is also close to sea level. Its near coastal providence would temper its winter climate, perhaps increasing the chance of occasional late adults. Yet, proneness of low coastal heath and herb-lands to frosts (in the absence of any canopy vegetation) and frequent wind chill (in the absence of woodland or forest windbreaks) might counter any seasonal extensions. The heat sink of the Melbourne CBD, located only 4-



T. serpentata male photographed at Boondall Wetlands, Brisbane. Photo Russel Denton



5km away, may uniquely temper the climate at the wetlands, perhaps aiding the extension of this species' historic flight season.

5. **Rare seasonal events happen at random across species' ranges.** A likely explanation is that rare seasonal events, such as warmer-than-usual winters, might enable an extra generation. Supportively, a Bureau of Meteorology media release announced that 2009 recorded 'the warmest winter on record' (BoM 2009a). Over that three month period, its winter 'maximum and minimum anomaly' range-fill maps indicated 0-1 degree above average mean winter temperatures for Victoria (BoM 2009b).
6. **Is this an early effect of imposed climate change?** With global warming or anthropogenic climate change, one might initially expect stragglers to extend into the cooler interim of mid winter, as part of a temporal edge creep. A gradual increase in adult abundance of some butterfly species during early and late winter would follow. Near Melbourne, those species that regularly fly from late August (or early spring) through to late autumn (or early winter) would be likely candidates to monitor for these predicted changes. Continuity of breeding through winter may then become the norm for some butterflies that presently struggle to bridge the gap. Apart from *T. serpentata*, these might include *Delias aganippe*, *D. harpalyce*, *Pieris rapae*, *Vanessa kershawi*, *V. itea*, *Junonia villida*, *Candalides acasta*, *C. hyacinthina*, *Nacaduba biocellata*, and *Zizina labradus* to list an obvious few.

Conclusion

An overwhelming amount of evidence for this species suggests an absence of butterfly flight activity during midwinter (July) in suburban Melbourne. However, this evidence is not impartial but biased by collectors' interests – most enthusiasts do not seek butterflies in winter in Victoria. It is unclear why the adults of *T. serpentata* were common in mid July last year and seemingly for the first time ever. It may have been just a rare event, and perhaps one that has occurred previously at this site (but never documented, or even noticed), adaptively linked to warmer-than-usual winters – but today there is another issue at hand. Could the beginnings of climate change be partly responsible for this flight extension in 2009? At this stage, further observations will help determine the regularity of their midwinter appearance at coastal sites where the species is common, but may not answer the question. Regardless, it seems amazing to me that over the last 140 years since butterfly record keeping began, there have been no other reports of this species' flight activity in June, July or August (the latter month by inference) in suburban Melbourne before 2009!

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AUSTRALIAN NATIVE BEES #16

Some FAQs About Stingless Bees – John Klumpp

Yes, I've finally succumbed to the allure of the acronym, so common now in the age of the computer and mobile phone. That's a big step for someone who, until very recently, had no idea what B.L.T meant on a café menu. I can only assume from the number of websites and advisory publications which now include a list of Frequently Asked Questions that many people find reading the inquiries of others (and the responses they receive) both



It is quite common to see *Apis* bees and Stingless bees foraging on the same flowers.



helpful and informative. With this in mind I've decided to include in this issue some of the FAQs about Australian Stingless Bees.

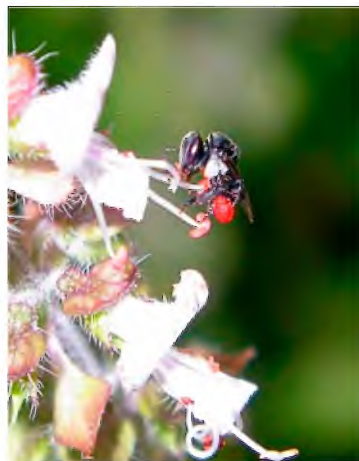
Q. Can you keep a hive of honeybees and a colony of stingless bees in the same suburban back yard?

A. Yes, but firstly I should mention that the introduced European Bees (*Apis mellifera*) and Australian Stingless Bees (*Trigona* and *Austroplebeia* spp.) are, technically speaking, both 'honey bees' in that they collect nectar which they convert into honey. In doing so they rarely come into conflict and it is quite common to see *Apis* bees and stingless bees foraging for nectar and pollen from the same flowers. It is also not uncommon to find stingless bees and feral *Apis* bees nesting in the same hollow tree with little more than a layer of cerumen or propolis separating the colonies. Many commercial apiarists have a hive or two of Australian Stingless Bees as a curiosity and some take more than a passing interest in them. The *Apis* bees will out compete our stingless bees for nectar and pollen when times are tough (especially during the cooler months), but in my experience our little native social bees manage to get by and often flourish despite the greater foraging efficiency of their nearby European immigrant neighbours.

Q. What types of plants are best for Australian Stingless Bees, natives or exotics?

A. All sorts that produce nectar and pollen. Unlike some specially adapted bees (and other insects) that are dependent on specific flower types, our native stingless bees have evolved as generalists and will utilize native and introduced flowering plants without discrimination. Flowers with heavy pollen yields are particularly attractive to them. I find that the inflorescences of palms are a drawcard as are the fresh flower spikes on Grass Trees (*Xanthorrhoea* spp.). In February, following the rain around SE Qld, my bees were hungrily gathering the copious amounts of pollen produced by the flowering Crocus, which flourish in the garden beneath my hives.

They are also attracted to the flowers on the nearby Basil where they compete with the native Blue Banded Bees (*Amegilla* spp.) for the red coloured pollen. I will digress for a moment to mention that Blue Banded Bees are just one of the many types of solitary bees we have in Australia and they are always welcome in my



Trigona bees compete successfully for the pollen yield of my Basil's flowers



garden. In fact I have provided them with a nesting site in a quiet, sheltered area in the form of a stack of dried mud blocks into which they dig their nesting tunnels.

Q. What happens when the stingless beehive becomes full up, do you have to extract the honey or split the hive?

A. No, not if you don't want to. Having your own stingless beehive does not mean burdening yourself with another chore like milking the cow or collecting the eggs. Stingless bees can be enjoyed just for their presence in the garden or appreciated for their pollination of some of your plants. You do not have to manage the bees by periodically robbing their excess honey or dividing the hive. A stingless bee colony in a log or artificial hive will get along quite well without any interference at all from us. You may have to accept that every year or two your mature hive may attempt to set up a daughter colony in a natural or artificial cavity somewhere nearby, but where is the harm in that? Unlike European honeybees the old queen in your hive will not attempt to leave (she can no longer fly) so the establishment of an offspring colony somewhere should not threaten the sustainability of your hive.

Q. Do stingless bees produce much honey?

A. This is, of course, the most frequently asked question of all. Perhaps the answer should be that it's all relative. Taking into account the size of these bees, the population of their colonies and their limited foraging range, yes, they produce a lot of honey. However, compared to the commercial yields obtained from well managed hives of European honeybees it is minuscule.

A comparison often touted is that where a large hive of *Apis* bees may produce 75kgs of excess honey in a good season a stingless bee colony under the same conditions might produce 1kg. I don't know if these figures have been ascertained under strict scientific scrutiny or not, but my guess is the comparison is somewhere near the mark. One kilogram of honey in a whole year is not a lot to spread on your toast every morning, but tangy stingless bee honey is to be savoured, not simply devoured. Keep it for special occasions. A teaspoonful drizzled on vanilla ice cream is a real treat. And of course we haven't touched on the medicinal benefits that our aboriginal



Tangy stingless bee honey needs to be savoured – not simply devoured.



people believed sugarbag provided and which modern medicine is now confirming. We will have to leave that for another list of FAQs.
Photos John Klumpp

EXCURSION REPORT

Ray and Delphine Archer's Property – Peace Garden and Little Bird Heaven, Coominya - Saturday 6th and Sunday 7th February 2010 - Alisha Steward

If there was a prize for the most relaxing BOIC excursion we have ever had, then this one surely wins hands down! We spent the weekend leisurely strolling along hundreds of metres of paths within Ray and Delphine Archer's property, swimming in their beautiful "billabong", enjoying their homemade delights and sipping chilled homemade watermelon juice on their beautiful deck overlooking the garden while butterflies danced in the sky, frogs called and small birds sang. And all of this without a single neighbour to be seen. Bliss!



Ray and Delphine's garden was unlike anything I had ever seen. I was overwhelmed with excitement as I drove up to the entrance – it looked like an official botanical garden! In only 3 years they have transformed their land in Coominya into a butterfly and bird haven, by carefully selecting appropriate native and exotic plant species for nectar, bird nesting sites, and butterfly host plants. The tallest plants stand only a few metres high, which is the key to their success in attracting small birds – the short bushy plants provide a safe habitat for birds, and it certainly works. The garden was alive with the gentle tweeting of small birds such as brown honeyeaters.



The billabong

I had been told by Ray and Delphine that we should bring our togs for swimming in the billabong. Now I've seen many a billabong on my field trips, and they are often mucky and brown, so I was a little sceptical when I heard this! However, to my surprise, the billabong was as clear as a swimming pool, and all without the use of chlorine! The water circulates through the billabong and along a man-made, but



natural-looking, stream, while nature takes care of the rest. It was home to tadpoles and aquatic invertebrates, including some rather large dragonfly nymphs. Everyone was overwhelmed by the beauty of the billabong. It was fringed by attractive plantings of small grasses, herbs and shrubs.

Ray invited us into his butterfly enclosure, which contains host plants, nectar plants and butterflies on the wing. An aviary, home to finches and quail, ran alongside the butterfly enclosure.



Peter – the great white hunter!

At night we set up a light trap and observed the critters that were attracted to it. Light trapping was highly successful; probably because the light emitted from the trap was the only obvious light visible for kilometres. The light trap attracted a multitude of moths, beetles, cicadas and other insect groups. The insects were in fact so numerous in the air that we accidentally inhaled some! Peter Hendry is pictured here photographing some of the moths. You can appreciate

how numerous the insects are in this photo (note the Rhinoceros Beetle on his shoulder). Rhinoceros Beetles seemed to be the most obvious invertebrate attracted to the light – or perhaps it was only because we “felt” them more than any other invertebrate! They slammed into our backs while on route from the black night sky to the light. It was much like having a cricket ball thrown at you. I had never seen so many of these beetles in the one place before.

This was a very enjoyable excursion. BOIC cannot thank Ray and Delphine enough for inviting us to their amazing garden, and for their wonderful hospitality. Thank you!

Photos Alisha Steward

AT THE LIGHT TRAP

A Night at Ray's – Peter Hendry

When Ray Archer invited the BOIC to his "Peace Garden and Little Bird Heaven", I just had to be there. Ray's enthusiasm was evident when we first met. When he first visited my place, it was with a battered copy of the club's butterfly host plant booklet in hand, looking for more host plants. Following this, during a phone conversation, I



relayed I could no longer walk the path to my old chook house, because of all the Pentas that had overgrown the path. Nectar plants! Just what Ray wanted! He was down the following weekend and within a short time I had a clear path and Ray was off with about 5 large garbage bags of cutting material. So knowing of all the work he had put into his garden I could hardly wait to see it.

No one who went on the excursion was disappointed. The gardens were wonderful, the extra large rock pool was well used and the purpose built house really achieves Ray's lifestyle aspirations. While walking in the gardens, many butterfly species were seen flying and from every disturbed bush moths abounded. While enjoying my ramblings in the garden I could hardly wait for nightfall.

With the light up and running it was not long before we were inundated. Besides the moths there were a large number of Rhinoceros Beetles (*Xylotrupes gideon*). It was a case of holding one's breath when close to the light sheet (see photo in excursion report, this issue). The numbers were smothering, 80% to 90% of the moths were the



Casbia rectaria



Euproctis lutea




Nyctemera secundiana



Oenochroma pallida

same species, *Casbia rectaria*, Walker 1866, a member of the Geometridae family, subfamily Ennominae. It has a range from Cape York to northern New South Wales. I was delighted to see a couple of new (for me) species; the small but colourful Crambidae, *Diathrausta ochreipennis* (Butler, 1886) from the subfamily Pyraustinae and the hawk moth *Acosmeryx anceus*. *A. anceus* ranges from India through South-East Asia and eastern Australia from Cape York to Sydney. Another hawk moth to



Magazine of the Butterfly and Other Invertebrates Club #57 – Page 31

appear was *Theretra latreillii*. While ranging widely in the Orient, in Australia it occurs in north-western Australia, the Northern Territory and eastern Australia as far south as Sydney. Other members of the Crambidae subfamily Pyraustinae to make an appearance were, *Agrotera amathealis* (Walker, 1859), *Notarcha aurolinealis* (Walker, 1859) and *Sceliodes cordalis* (Doubleday, 1843). The Magpie Moth, *Nyctemera secundiana* T.P. Lucas, 1891 Arctiidae Arctiinae, was flying in numbers during the day but only one came to light.



Notarcha aurolinealis



Sceliodes cordalis



Agrotera amathealis



Theretra latreillii



Rusicada revocans



Acosmeryx anceus

Other notable species were *Euproctis lutea* (Fabricius, 1775) Lymantriidae Notodontinae s.lat, *Oenochroma pallida* Warren, 1898 Geometridae Oenochrominae and *Rusicada revocans* (Walker, [1858]) Noctuidae Catocalinae. Others not imaged include an *Amata* sp. Arctiidae Ctenuchinae, from the subfamily Catocalinae of the Noctuidae, *Buzara latizona* (Butler, 1874), 1858, *Donuca orbigera* (Guenée, 1852), *D. castalia* (Fabricius, 1775), *Grammodes justa* Walker and *Ophiusa parcemacula* (T.P. Lucas, 1891). The Noctuidae subfamily Acronictinae/Amphipyrynae was represented by *Cosmodes elegans* (Donovan, 1805) and a *Thalatha* sp. *Cernia amyclaria* Walker, 1860 represented the Geometridae Oenochrominae.

On closing I must thank Ray and Delphine for their warm welcome and hospitality.

Photos Peter Hendry



The Imperial Blue Butterfly by Linda Rogan 2009 – reviewed by Martyn Robinson

This DVD, although not a polished production and containing no video clips, nevertheless provides a very good photographic summary of the life history and biology of the Imperial Hairstreak (*Jalmenus evagoras*) in the author's area of Victoria. As most of you know, this is one of the Lycaenid butterflies which are attended by ants – in this species by the small black *Iridomyrmex* species. The DVD has photos of the eggs, larvae, pupae and adults of the butterfly, as well as the associated ants tending these stages, the food plants observed by the author of the DVD, and some of the other insects involved in the cycle - such as two species of parasitic wasp and the green tree hoppers which seem to also be found on the same plants and attended by the same ants. Interestingly, Linda was unable to find any first instar larvae although she noted that the literature mentions the ants ignore them, but I have found that in the absence of larger larvae the hatchlings tend to associate with these tree hoppers which are being attended by the ants and thus gain some protection – interestingly when the larvae are larger the reverse situation occurs with the tree hoppers seeking out and associating with the larval clusters instead!

She also mentions the three types of glands the larvae possess and with arrow overlays indicating their presence on the larvae. There are also various shots showing courting behaviour and egg laying.

This fifteen minute DVD would make a nice addition to any field study centre, school, or natural history library which has an interest in symbiosis, insects, butterflies or natural history in general.

The DVD is available from the Friends of Warrandyte State Park, PO Box 220, Warrandyte Vic 3113 for \$8 plus \$1.50 postage. An order form can be found at www.fowsp.org.au

YOU ASKED

What butterfly is this?

I photographed a butterfly today (one of around 20 buzzing our *Buddleja*) and I can't find it in "Butterflies of Australia". The closest I can get is *Sabera caesina albifascia*, but it's not right. I have attached a couple of photos in the hope you would be good enough to identify it for me. I thought it



interesting that the lines on the upper body are repeated on the wings. Also is the orange colour on the legs pollen or part of its colour scheme? **Marc Newman**

When Daphne forwarded this Email to me she added, “Something about it reminds me of a Joseph’s Coat moth”. Daphne was on target it was indeed a moth and not a butterfly. Like the Joseph’s Coat moth (*Agarista agricola*) this moth is also a member of the Noctuidae subfamily Agaristinae.

The moth is *Phalaenoides glycinae*, Lewin, 1805 (Noctuidae: Agaristinae) It is a pest of cultivated grape vines as well as feeding on *Hibbertia*, *Oenothera* and *Epilobium*. Its distribution is from southern QLD to Vic, SA and TAS. The orange colour on the legs is all part of the colour scheme and not pollen.

This begs the question, what is the difference between a Butterfly and a Moth? The real answer is “not much”. They are both part of the insect order Lepidoptera. Derived from the Greek words for scale, lepis and pteron meaning wings, the Lepidoptera have scaly wings. This separation of butterfly and moths is more man-made than anything from nature. In Australia the Lepidoptera comprises 89 families, of which just 5 contain butterflies, HesperIIDae, Lycaenidae, Nymphalidae, Papilionidae and Pieridae.

There are several differences put forward to separate butterflies from moths but all have exceptions:

- **Butterflies fly by day, moths at night.** There are several species of moths that fly during the day and some species of butterflies that fly late in the evening and at dawn.
- **Moths rest with their wings out flat or against their bodies while butterflies hold their wings upright.** Most butterflies will hold their wings flat at certain times, often on cloudy days to absorb heat and some species of moths in the Geometridae family that I have attracted to light will hold their wings upright. Some butterflies in the HesperIIDae family have an each way bet, with their forewing held upright and the hind wing out flat!
- **Moths have a coupling device that hooks their wings together in flight, butterflies do not.** Not all moths do, for example the Saturniidae lack any coupling devices while the male of the Regent Skipper butterfly has such a device.
- **Butterflies have clubbed antennae. Moth antennae are feathered or filiform.** This is true except of the moth family Castniidae which happen to be daytime flying moths with clubbed antennae.

In spite of the exceptions, the best guide would be to see if the antennae are clubbed. If they are not, you have a moth, if they are you have a butterfly or a moth in the Castniidae family. The Castniidae are not often encountered, in general they have a grey or brownish forewing and the hind wing is often yellow or red with black markings. There are about forty species with about 7 occurring in Queensland.

Peter Hendry



NEW HOST PLANT

A new host plant for the Scarlet or Northern Jezebel butterfly (*Delias argenthona*) - Ross Kendall

In April this year, at Upper Thane Creek west of Warwick, Queensland, I observed several *Delias argenthona* butterflies flying near mistletoes. These were the Bronze or Box Mistletoe (*Amyema miquelii*), a form of the Drooping Mistletoe (*Amyema pendula* subsp *longifolia*) and the Fleshy Mistletoe (*Amyema miraculosa*), which was parasitising the Drooping Mistletoe.

I found a small cluster of eggs on young growth of the *A. miquelii* then some final instar larvae of *D. argenthona* on older growth of the same host plant. Soon after this I located a



A typical egg cluster *Delias argenthona* on *Amyema miraculosa*



Third and fourth instar larvae of *Delias argenthona*

pupa of *D. argenthona* attached to a leaf of *A. miraculosa* on a nearby tree. Further investigation led to the discovery of an egg cluster on that same mistletoe.



Pupa and underside of adult male *Delias argenthona*

The eggs were collected and raised through to adult *D. argenthona* on *A. miraculosa*, which can now be recorded as a host for the Scarlet Jezebel.

Photos Ross Kendall and Peter Hendry (butterfly)

LETTERS

From Jak Guyomar

We have growing at Gumdale, a couple of grafted West Australian Eucalypts (*E. ficifolia*). Recently when I brushed past one I received a wakeup sting. At first I looked for the wasp's nest, but found a number of weird looking caterpillars I did not



recognise. I quickly assumed that they were Emperor Gum Moth larvae. I collected 8 of them and transferred them to a cage with some leaves.

Every day when I checked them there were progressively less numbers. I assumed that they were cannibals! Strange behaviour for moth caterpillars, I vaguely thought. Also I had not read that Emperor Gum caterpillars stung.

On the twigs of foodplant I had put into the cage were what I again vaguely thought were wasp galls. I decided that I would let them hatch out to see what they were.

IT ALL BECAME CLEAR when one morning there were a number of small fat moths in the cage! Cup moths! The galls were pupae. The caterpillars were NOT eating each other. They were pupating and adding to the “gall” numbers.

Goes to show how vague a long time amateur can be when casually observing the goings on in one's garden.

They preferred the W.A. Eucalypts and were on both the pink and red flowering forms. There was no sign on any of the local Eucalypt species.

The stings from the caterpillars were similar to stinging nettles. Quite an attention getter!

Ed. note- Jak, Peter has identified your moth as a Mottled Cup Moth (*Doratifera vulnerans*) (Lewin, 1805) Family: Limacodidae. Photos Jak Guyomar



Cup Moth larvae



Larva with stingers withdrawn



Emerged pupal case



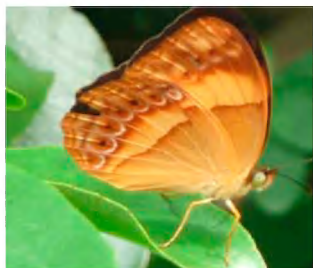
Adult



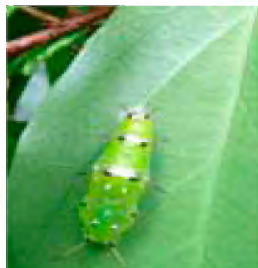
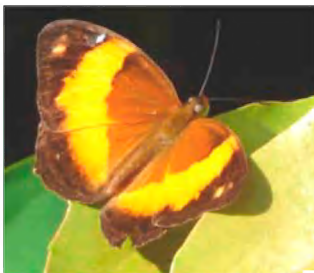
From June Wimberley

13 or 14 years ago I bought a Cape Plum (*Flacourtia*) from Fairhill Nursery as a host plant for the Australian Rustic butterfly (*Cupha prosope*). The tree, which has grown to 15 feet (normal size), has thrived under my red cedar tree. It has always had light plum coloured leaves at the ends of the branches and is a most attractive tree to have in my garden. This year, for the first time, it has produced white to pale cream clusters of flowers along its stems and, wonder of wonders, it has attracted the Australian Rustic butterfly for the first time! I am thrilled as I have been fortunate enough to see a pair mating and I have observed at least five at a time flitting around the tree. So far I have not seen a caterpillar or pupa but I will keep looking. I have had a great number of wonders in my garden this season, but so far no birdwings although I have an abundance of new leaf on the vines and I have had a good number of seed pods which I pass on to Ray Seddon for propagation.

Photos June Wimberley



Australian or Bordered Rustic (Cupha prosope) on Flacourtia



Rustic pupa

From Hilton Selvey

The recent very dry and hot spell (Ed. This letter was written in January 2010) has wrecked havoc with trees, bushes and Birdwing Vines. Our birdbath attracted many birds, four new species were observed, as they splashed around cooling off. Amongst the birds enjoying the water were Mud Dauber Wasps (*Trypoxylon politum*) drinking. At times there was more than one wasp. When there was some rain the wasps disappeared from the birdbath.

A number of nests were opened and a newly laid egg was found attached to a paralyzed spider. An attempt



Wasp drinking at birdbath



was made to raise it through but it became dehydrated. A larva around 155mm long was discovered in another nest. It was unlike any other larva as it had no anus that could be seen and no frass could be found.

Ed note: I forwarded an image of the larva to the Queensland Museum Enquiry Centre and the reply was - “The larva will almost certainly be a wasp larva, hatched from an egg deposited on the paralysed spider when it was



Egg, approx. 3mm long, deposited on paralysed spider



Wasp larva

stashed into a holding cell. A number of wasp species do this – we cannot identify it from the larva but a picture of the wasp nest would certainly help.”

Photos Hilton Selvey

BUTTERFLY LARVAE IMAGES



Lurcher (*Yoma sabina*)



Blue-banded Eggfly (*Hypolimnas alimena*)



Yellow Migrant (*Catopsilia gorgophone*)

Photos Ross Kendall



BOIC ON FACEBOOK

BOIC is now on facebook!

Type <http://www.facebook.com/group.php?v=wall&gid=187619097411> into your browser. View details of upcoming excursions, read posts on invertebrate discussions, share invertebrate information, and more!

OTHER GROUPS' ACTIVITIES

Sunday August 29th – 11am till 3pm - Lowlands Festival - “The Free Family Fun Festival” - Osprey House Environment Centre - Dohles Rocks Road, Griffin.

Want a day that keeps everyone in your family happy? Then get out and enjoy “Living with Our Environment” at the Lowlands Festival on Sunday August 29th from 11am till 3pm. It's the place to be if you're looking to discover loads of free family fun. The kids will get their faces painted, enjoy fun tattoos, make crazy candles, be entertained by local entertainers and the jumping castle will be great for the little ones. The Radical Reptiles and other Wildlife Shows will entertain all visitors with native wildlife species.

BUTTERFLY AND OTHER INVERTEBRATES CLUB PROGRAMME

Planning and Management Meeting

What: Our planning meetings are informative and interesting. As well as planning our activities we share lots of information. All members are welcome as this activity is also a general meeting of members.

When: **Saturday, 14th August, 2010 from 1.30 pm**

Where: Ross Kendall's home, 17 Eldon Street, Indooroopilly

RSVP: Ross on 07 3378 1187 or Daphne on 07 3396 6334

Lowlands Festival, Moreton Bay Regional Council

What: We will be holding a display at this event

When: **29th August, 2010** from 11am to 3pm

Where: Osprey House, Dohles Rocks Rd., Griffin

SGAP Spring Flower Show and Plant Sale

What: We will be holding a display at this event. Members looking for butterfly/moth hostplants may find something interesting amongst the plants for sale.

When: **20th and 21st September, 2008**

Where: The Auditorium, Mt. Coot-tha Botanic Gardens



DISCLAIMER

The magazine seeks to be as scientifically accurate as possible but the views, opinions and observations expressed are those of the authors. The magazine is a platform for people, both amateur and professional, to express their views and observations about invertebrates. These are not necessarily those of the BOIC. The manuscripts are submitted for comment to entomologists or people working in the area of the topic being discussed. If inaccuracies have inadvertently occurred and are brought to our attention we will seek to correct them in future editions. The Editor reserves the right to refuse to print any matter which is unsuitable, inappropriate or objectionable and to make nomenclature changes as appropriate.

ACKNOWLEDGMENTS

Producing this magazine is done with the efforts of:

- Those members who have sent in letters and articles
- Lois Hughes who provides illustrations including the cover
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- John Moss and Tim Heard for scientific referencing and proof reading of various articles in this issue of the magazine
- Printing of this publication is proudly supported by Brisbane City Council



We would like to thank all these people for their contribution.

Dedicated to a better Brisbane

ARE YOU A MEMBER

Please check your mailing label for the date your membership is due for renewal. If your membership is due, please renew as soon as possible. **Membership fees are \$25.00 for individuals, schools and organizations.** If you wish to pay electronically, the following information will assist you: BSB: **484-799**, Account No: **001227191**, Account name: **BOIC**, Bank: **Suncorp**, Reference: your membership no. and surname e.g. **234 Roberts**.

Butterfly and Other Invertebrates Club Inc.
PO Box 2113
RUNCORN Q. 4113

Next event – Planning and Management Meeting - Saturday, 14th August, 2010 from 1.30 pm



Magazine of the Butterfly and Other Invertebrates Club #57 – Page 40